Before the
Federal Communications Commission
Washington, DC 20554

In the Matters of	)	
	)	
Inquiry Concerning 911 Access, Routing, and	)	PS Docket No. 17-239
	)	
Location in Enterprise Communications Systems	)	

OPENING COMMENTS OF BANDWIDTH INC.

I. INTRODUCTION

Based in Raleigh, North Carolina, Bandwidth Inc. ("Bandwidth") is one of the nation's leading providers of Internet Protocol (IP)-based communications services. Among the most important of Bandwidth's IP-enabled services are the emergency calling services it offers in conjunction with an ever-expanding array of IP-enabled services. Because technology persistently challenges established laws, industry practices and consumer expectations, Bandwidth believes the public interest is best served by embracing communication innovations that spring from IP technologies while simultaneously striving to meet the critical emergency service needs of consumers and public safety professionals alike.

To this end, Bandwidth supports the Commission's on-going efforts to confront an array of issues in the 911 emergency calling arena today, including the need to update emergency calling capabilities associated with Enterprise Communication Systems services ("ECS").[1] In light of the fact that ECS 911 has not been holistically reviewed for a number of years[2], Bandwidth agrees that the Commission should re-assess how ECS services are offered in today's advanced communications marketplace and consider how 911 calling support might be improved to the benefit of ECS end-users across the country. In conducting its NOI review, Bandwidth

[1] *In the Matter of Inquiry Concerning 911 Access, Routing and Location in Enterprise Communications Systems, PS Docket No. 17-239*, Notice of Inquiry, FCC 17-125 (rel. Sept. 26, 2017) (hereinafter "*ECS 911*
[2] See *ECS 911 NOI* at ¶ 9. (Discussing *E911 Scoping Order*, 18 FCC Rcd at 25341).

anticipates that there will be general consensus that ECS services continue to rapidly evolve toward IP-based systems and services and that as a result, public safety will benefit from Commission efforts aimed toward establishing a more unified national legal framework for more effective ECS 911 calling.

II. IP TECHNOLOGIES CAN SUPPORT BETTER LOCATION INFORMATION IN MORE CONSUMABLE FORMATS FOR PSAPS AND EMERGENCY RESPONDERS

One of the most promising and persistent characteristics of IP networks and technologies is that it reduces barriers to market entry while correspondingly helping advance innovative service that meet consumers' communications demands. Bandwidth operates a state-of-the-art nationwide IP-enabled communications network as well as offering some of the most advanced 911 calling capabilities in the marketplace today. In the intervening years since the 2003 *E911 Scoping Order,* IP-enabled ECS has advanced dramatically and it continues to have strong consumer adoption rates. IP-enabled communications platforms, whether cloud-based or hosted, bring rich new features to enterprise consumers that extend far beyond traditional desk phones.[3] Bandwidth firmly believes that we should work to ensure that 911 calling keeps pace with IP communications advancements for ECS consumers as much as elsewhere. The Commission's leadership in driving the migration away from legacy and outdated 911 technologies towards Next Generation 911 solutions[4] that embrace the promises of IP technologies, including improved ECS end-user location capture and delivery to PSAPs and emergency responders is critical.

Bandwidth believes that pursuing appropriately structured Commission-led ECS 911 rules can facilitate significant improvements in ECS emergency services while simultaneously accelerating

[3] *See e.g.*: Mark Vale, *Skype for Business – Understanding Location Based Routing*, June 2, 2016, https://three65.blog/2016/06/02/skype-for-business-understanding-location-based-routing/

[4] *See Next Generation 911 Deployment NOI,* PS Docket No. 10-255, FCC 10-200 (rel. Jan. 13, 2011)("*NG 911 NOI*").

broader adoption of Next Generation 911 technologies across the country. Today, the industry and regulators alike are struggling with a "chicken and egg problem" that is slowing the uptake of Next Generation 911 networks. Due to the number of parties participating in service provisioning, call initiation, call steering, call routing, and call answering processes, challenges arise in trying to effectively prioritizing specific components of an inherently complex but necessarily coordinated effort. Ultimately however, until all parties involved in a 911 call implement compatible Next Gen 911 components, no party to the call can gain the full panoply of benefits Next Generation 911 solutions offer. Meanwhile, a first mover in a Next Generation 911 deployment initiative risks spending the most while gaining the least as other necessary components take more time to deploy. Notwithstanding the genuine and impressive efforts on the parts of a number of states and counties to implement partial solutions, Bandwidth believes FCC guidance through uniform federal regulations that compel all parties in a 911 call chain to migrate to more technically advanced solutions are necessary.

Assuming that the ultimate goal of Next Generation 911 includes the end-to-end implementation of the NENA i3 SIP PIDF-Lo standard[5] the possibility of uniform FCC regulations for ECS 911 present a unique opportunity to require an ECS entity originating a 911 call to utilize the desired industry standard. In fact, Bandwidth is working with multiple partners who participate in the call origination role who are already implementing elements of the Next Generation 911 i3 specification for their own rational business reasons. Its partners include a wide array of service providers including ILECs, CLECs, IVoIP providers, Non-IVoIP providers, soft-switch vendors, soft-PBX vendors, UCaaS, CPaaS and others - all of whom may be positioned to address the business and compliance needs of ECS 911 end-users as the ECS industry continues to adopt IP-enabled services. In a growing number of these ECS service instances, a voice service end-point is increasingly unlikely to rest at a single physical location in a building at all times. With VOIP systems, such as IP-enabled ECS, UCaaS or CPaaS, a VOIP

[5] NENA-STA-010.2-2016 (originally 08-03).

end-point can be disconnected physically or moved as a soft agent to a completely different location readily. Therefore, ECS 911 rules that require location updates to a staid civic address occur are inadequate in a fully nomadic IP-enabled environment. Instead, Bandwidth believes that FCC rules that provide consistent and uniform Next Generation 911-based guidance would generate a number of desirable outcomes such as improved 911 effectiveness for all stakeholder, lower complexity, and lower costs and Bandwidth believes the FCC has the beginnings of such an opportunity here with this *ECS 911 NOI* as an important component to its more holistic efforts to advance 911 services.

III. A MORE UNIFIED NATIONAL LEGAL FRAMEWORK THAT IS COORDIANTED WITH NEXT GENERATION 911 DEPLOYMENT WILL ADVANCE ECS 911 CALLING AND PUBLIC SAFETY OBJECTIVES

The Commission's NOI accurately demonstrates the confusing array of rules, laws and guidelines that surround ECS 911 calling today.[6] Somewhat similar to the Commission's acknowledgements in its *911 Governance Policy Statement and NPRM* regarding questions surrounding proper service classifications and state and federal jurisdiction for over-the-top ("OTT") smartphone applications.[7] it will be beneficial for the Commission to reform outdated legal positions regarding 911 calling associated with ECS as well and all while simultaneously advancing Next Generation 911 capabilities as broadly as possible. An active role from the Commission concerning ECS 911 and Next Generation 911 deployment at this time will significantly help reduce confusion both in the communications marketplace and the emergency service community alike.

A clear set of rules and guidelines at the federal level will yield positive results for consumers, service providers and the emergency service community – all of who deserve effective

[6] See e.g. *ECS 911 NOI* Appendices A and B, which address different defined classes of communications services relative to 911 calling requirements as well as the myriad state laws applicable to ECS 911.
[7] *911 Governance Policy Statement and NPRM* at ¶¶ 57-63; *See also: In the Matter of Wireless E911 Location Accuracy Requirements, E911 Requirements for IP-Enabled Service Providers, PS Docket No. 07-114 and WC Docket No. 05-196,* Further Notice of Proposed Rulemaking and Notice of Inquiry, FCC 10-177 (rel. Sept. 23, 2010) at ¶¶ 31-32.

emergency calling with ECS services. As the *ECS 911 NOI* highlights in multiple places, the legal landscape surrounding ECS 911 is confusing and difficult to navigate.[8] While there have been on-going efforts to advance 911 support for ECS at the local, state and federal levels over the years, the results have been somewhat spotty. The Commission notes that "[a]s of 2016, 24 states had enacted, or had pending, legislation generally requiring enterprises over a certain size or purchasing a new PBX-based ECS system to implement and activate E911 capabilities in the system."[9] However, in concert with these legislative and regulatory efforts to support MLTS 911, IP-technology has continued to advance and break down barriers to entry to innovative service providers. Therefore, it becomes imperative that the legal and regulatory environment evolves to recognize and embrace IP-enabled services and technologies. To this point, Bandwidth sees two elemental problems with current MLTS laws and regulations (or lack thereof) that can be prioritized for reform by the Commission: (1) they do not inherently consider the nomadic nature of modern IP communications and (2) where MLTS laws do exist, they typically don't provide useful guidance for standards-based implementations. Commission-endorsed ECS 911 rules oriented around a NENA i3 standard for SIP PIDF-Lo architectures[10] could ameliorate both of these problems.

As the *ECS 911 NOI* demonstrates, current MLTS statutes largely fail to recognize the fully nomadic nature of modern VOIP-based communications services. One example of an MLTS statute that fits this general description is Utah's recently enacted MLTS law.[11] Like other statutes that are included in Appendix B in the *ECS 911 NOI*, Utah's MLTS law remains fundamentally rooted in a "wire-line address" mode. As described above, our modern VOIP

[8] *See e.g.: ECS 911 NOI* at ¶ 7 discussing ECS as "private systems"; *ECS 911 NOI* at ¶ 9 discussing *2003 Scoping Order*; *ECS 911 NOI* at ¶ 12 discussing 2011 NENA model legislation updates,; and *ECS 911 NOI* Appendix B summary of State MLTS laws.

[9] *ECS 911 NOI* at ¶ 14 FN 32 citing: 911 ETC, Current 911 MLTS Legislation, http://www.911etc.com/legislation (last visited August 21, 2017); 9-1-1 Enable, State-by-State E911 Legislation Summary at 14 (2012), http://files.meetup.com/3299882/State-E911-Legislation-Summary.pdf(911 Enable Report).

[10] *See*: NENA-STA-010.2-2016 (originally 08-03) ("NENA i3 SIP PIDF-LO standard").

[11] Utah Code § 53-10-601 *et. seq.*

communications ecosystem makes it increasingly unlikely that an ECS end-user will be tied to a single physical location in a building at all times. Thus, legacy methodologies that would associate an end point with an IP switch or router or a specific port upon a switch or router are less and less effective all the time. This is because in modern VOIP systems, such as ECS, UCaaS or CPaaS, the VOIP end-point can be disconnected physically or moved as a soft agent to a completely different location readily and rules that require location updates to occur within one business day of an end point's movement are inadequate in a fully nomadic IP-enabled environment. Similarly, MLTS laws and rules which contemplate that MLTS systems will remain physically associated with buildings and properties do not support IP-enabled ECS 911 scenarios well. Because an IP end-point can be a soft agent that resides on a mobile device, like a smart-phone, a laptop or tablet (which could be completely outside the expected building environment), an vastly more accurate end-user location that could be provided to the PSAP would be a latitude-longitude or "X/Y coordinates" instead of a civic address and floor number.

Thus, what would most advance location accuracy for ECS 911 are rules and guidelines that embrace and recognize IP technologies and their more complex nomadic capabilities. Bandwidth asserts that the NENA i3 SIP PIDF-Lo standard satisfies these requirements. NENA i3 generally, and SIP PIDF-LO more specifically, satisfy the need for a variety of "Location Objects" including *both* civic address and latitude-longitude representations while also envisioning future location identifiers that may be incorporated as part of the standard. Further, the "Location Objects" are validated in advance of calls but selected at call time thus fulfilling the requirements of a fully nomadic environment. Finally, it is worth highlighting that these benefits would not be limited to ECS 911 scenarios but could be deployed across other IP-enabled services as well. Current laws, rules, industry standards and best practices fully adopt the goal to present the most accurate location information available in a format that is most readily utilized by emergency call

takers.[12] As IP-enabled calling continues to become not only increasingly nomadic but also entirely mobile, the need for location updates increases and raises the specter of how to obtain and present the most accurate location information available at the time an emergency call is made.[13]

IV. CONCLUSION

Bandwidth appreciates the opportunity to comment in this *ECS 911 NOI* and the Commission's on-going efforts to support emergency calling that protects consumers as innovative IP-enabled services grow. IP-based innovations of all kinds continue to flourish and Bandwidth is committed to enabling IP-enabled end-users with the ability to reach emergency responders when they need them. ECS is an important form of consumer-driven innovation occurring in the communications marketplace that is in need of enhanced emergency calling capabilities. Bandwidth looks forward to a committed effort among all industry stakeholders to resolve the current gaps in ECS 911 emergency calling services that risk the effectiveness of critical emergency response.

Respectfully submitted,

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[12] 47 C.F.R. § 9.5, 47 C.F.R. §20.18; *See also*: *In the Matter of Wireless E911 Location Accuracy Requirements, PS Docket No. 07-114*, Third Further Notice of Proposed Rulemaking, FCC 14-13 (rel. Feb. 21, 2014) at FN 2. ("We note however, that we will continue to examine whether it is appropriate to establish indoor location requirements for other categories of services – including service by VoIP and over-the-top providers.").

[13] *See* Letter to Marlene Dortch, Secretary, Federal Communications Commission from John Wright, et al., (Nov. 18, 2014), PS Docket 07-114, (Including "Roadmap for Improving E911 Location Accuracy).